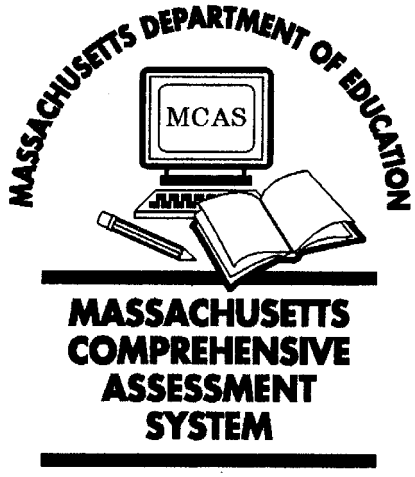

2003 NAEP Tests:

Summary of Results for Massachusetts

November 2003
Massachusetts Department of Education

MASSACHUSETTS DEPARTMENT OF EDUCATION

This document was prepared by the Massachusetts Department of Education.
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Executive Summary of the 2003 NAEP State Results

In 2003, more than 16,400 Massachusetts public school students in grades 4 and 8 participated in the state administration of the National Assessment of Educational Progress (NAEP). Tests were administered in Reading and Mathematics. State-level results are provided in this report.

- Highlights

Students' scaled scores top national average

- Massachusetts fourth-grade students scored 228 on the reading assessment, higher[1] than the national average of 216. Eighth-grade students (273) also outscored their counterparts nationwide in reading (261).
- In mathematics, Massachusetts fourth-graders had an average scaled score of 242, higher than the national average of 234. Eighth-grade students scored 287, greater than the national average for eighth-graders (276).

Roughly 40% of fourth- and eighth-graders are proficient in Reading and Mathematics

- In reading, 40 percent of Massachusetts fourth-grade students and 43 percent of eighth-grade students scored at or above the *Proficient* level. Nationally, 30 percent of both fourth- and eighth-graders performed similarly.
- In mathematics, 41 percent of Massachusetts fourth-grade students and 38 percent of eighth-grade students performed at or above the *Proficient* level. Across the nation, 31 percent of fourth-graders and 27 percent of eighth-graders performed similarly.

Massachusetts continues to perform at or near the top of all states

- Based upon average scaled scores, Massachusetts tied for first in the nation in reading at grade 4 (with four other states) and at grade 8 (with two other states). In mathematics, Massachusetts tied for first in the nation at grade 4 (with nine other states) and tied for second at grade 8 (lower than one state, tied with eight states).

While among the highest in the nation, Massachusetts Reading scores declined at grade 4; Scores at both grades are higher than in 1998

- Fourth-grade students scored lower in reading in 2003 than in 2002, while scores for eighth-graders did not change significantly. 2003 reading results at both grades are higher than scores in 1998.

Students made significant gains in Mathematics

- Massachusetts fourth- and eighth-grade students scored higher in mathematics in 2003 than in 2000. The most pronounced gains were seen at grade 4, where nearly every subgroup (whites, African Americans / blacks, Hispanics; males and females; students with disabilities; students eligible for free/reduced-price lunch; students attending schools in central cities, urban fringes, and rural areas) improved its performance.

Fourth-grade Hispanic students scored impressive gains in Mathematics

- In 2003, fourth-grade Hispanic students in Massachusetts had an average scaled score of 222 on the mathematics assessment, higher than in 2000 (203). The percent of Hispanic students failing mathematics declined sharply. In 2003, 63 percent of Hispanic fourth-grade students scored at or above the *Basic* level, compared to 36 percent in 2000.

[1] Any difference noted as "higher" or "lower" in this report denotes a significant difference.

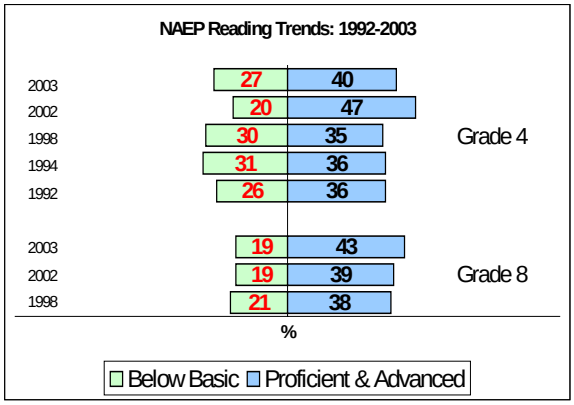
Racial achievement gaps were unchanged

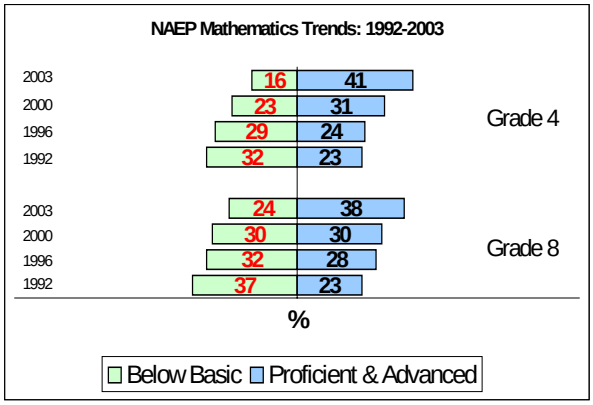
- Achievement gaps remained unchanged since the last test administrations in reading (2002) and mathematics (2000). Since 1992, the achievement gap has narrowed in mathematics at grade 4 – between white and African American / black students and between white and Hispanic students.

Gender gaps have opened up in Mathematics at both grades

- In reading, female students continue to outperform male students. Conversely, in mathematics, while the difference between males and females was not significant in 2000[2], male students outperformed female students at grades 4 and 8 in 2003.

❑ Trends in Reading and Mathematics





❑ Percent of Students Performing at or above *Proficient* in the Top Performing States[3]

	GRADE 4		GRADE 8	
READING	Connecticut	43	**Massachusetts**	**43**
	Massachusetts	**40**	New Hampshire	40
	New Hampshire	40	South Dakota	39
	New Jersey	39	Vermont	39
	Minnesota	37	North Dakota	38
	Vermont	37	Minnesota	37
	(NATION	*30)*	*(NATION*	*30)*
MATHEMATICS	New Hampshire	43	Minnesota	44
	Vermont	42	**Massachusetts**	**38**
	Minnesota	42	North Dakota	36
	Kansas	41	Connecticut	35
	Massachusetts	**41**	Wisconsin	35
	Connecticut	41	Vermont	35
	North Carolina	41	Montana	35
	(NATION	*31)*	*(NATION*	*27)*

[2] On the 2000 mathematics assessment, there was a split-sample of schools. In the sample where accommodations were permitted, there was no significant difference between male and female students. In the accommodations-not-permitted sample, male students scored higher than female students at grade 4.
[3] For scaled score comparisons and significance testing, see pages 14-15.

I. Introduction

The National Assessment of Educational Progress (NAEP), also known as "The Nation's Report Card," is the only nationally representative and continuing assessment of what America's students know and can do in various subjects. NAEP assesses representative samples of students in grades 4, 8, and 12 in core academic subjects. For more than 30 years, NAEP assessments have been conducted periodically in reading, mathematics, science, writing, U.S. history, civics, geography, and the arts. NAEP is also developing assessments in world history, economics, and foreign language.

NAEP is mandated by the U.S. Congress and is administered by the National Center for Education Statistics (NCES) at the U.S. Department of Education. The National Assessment Governing Board (NAGB), whose members are appointed by the Secretary of Education but remain independent of the Department of Education, sets policies for NAEP.

Students from 53 states and jurisdictions participated in the 2003 NAEP state assessments. Participating jurisdictions included the 50 states, the District of Columbia, the Department of Defense Domestic Elementary and Secondary Schools, and the Department of Defense Dependent Schools. More than 363,000 fourth-grade students from nearly 7,000 public schools and 293,000 eighth-grade students from over 5,500 public schools were assessed in reading and mathematics.

II. Background on the NAEP Assessments

Purpose

NAEP is a national assessment that fairly and accurately measures student achievement and monitors change in performance over time. NAEP has several components, including national assessments, long-term trend assessments, and state-by-state assessments. NAEP results permit educators, policymakers, and the public to examine student achievement across the nation and within individual states.

To report national results, NAEP assesses students in grades 4, 8, and 12 that attend public and nonpublic schools. For long-term trend assessments, NAEP measures student progress in basic achievement over time for students ages 9, 13, and 17. Since 1990, NAEP has also reported results for participating states by assessing public school students in grades 4 and 8. State-level results are based on assessments conducted in mathematics, reading, science, and writing.

NAEP does not provide scores for individual students or schools; instead, it offers results regarding subject-matter achievement, instructional experiences, and school environment for national and state populations of students (e.g., fourth graders) and subgroups of those populations (e.g., female students, Hispanic students). NAEP results are based on a sample of student populations of interest.

State NAEP

The state component of NAEP began in 1990 with an assessment in mathematics; 1992 for reading, 1996 for science, and 1998 for writing. With the exception of the mathematics assessment for eighth-grade students in 1990, Massachusetts has participated in every administration of state NAEP. Those state assessments include a mathematics assessment for fourth and eighth graders in 1992, 1996, 2000, and 2003; a reading assessment for fourth graders in 1992 and 1994 and for fourth and eighth graders in 1998, 2002, and 2003; a science assessment

at grade 8 only in 1996 and at grades 4 and 8 in 2000; and a writing assessment for eighth graders in 1998 and for fourth and eighth graders in 2002.

Beginning in 2003, the *No Child Left Behind Act of 2001 (NCLB)* required that all states receiving Title I funding participate biennially in the NAEP state assessments in reading and mathematics at grades 4 and 8. Likewise, school districts receiving Title I funding must participate if selected.

Table 1 below shows the schedule of NAEP state assessments from 2003 through 2011.

Table 1
Schedule of NAEP State Assessments by Year

Subject Area	Year				
	2003	2005	2007	2009	2011
Reading	✓	✓	✓	✓	✓
Mathematics	✓	✓	✓	✓	✓
Science		✓		✓	
Writing			✓*		✓

* Grades tested are 4 and 8, unless otherwise noted. In 2007, a writing assessment will be administered to eighth graders only.

Test Content

The 2003 administration of NAEP included tests in Reading and Mathematics. The NAEP Frameworks for each subject area specify what is to be assessed and how it is to be assessed.

The *Reading Framework for the 2003 National Assessment of Educational Progress* updated an earlier version first developed in 1992. The framework defines reading as an interactive and constructive process involving the reader, the text, and the context of the reading experience. Reading involves the development of an understanding of the text, thinking about the text in different ways, and using a variety of text types for different purposes.

The Reading Assessment measured three contexts for reading: reading for literary experience, reading to gain information, and reading to perform a task. Reading for literary experience involves the reader in exploring themes, events, characters, settings, problems, and the language of literary works. Various types of texts are associated with reading for literary experience, including novels, short stories, poems, plays, legends, biographies, myths, and folktales. Reading for information involves the engagement of the reader with aspects of the real world. Reading for information is most commonly associated with textbooks, primary and secondary sources, newspaper and magazine articles, essays, and speeches. Reading to perform a task (assessed at grade 8 only) involves reading in order to accomplish or do something. Practical text may include charts, bus or train schedules, directions for games or repairs, classroom or library procedures, tax or insurance forms, recipes, voter registration materials, maps, referenda, consumer warranties, or office memos.

NAEP measured reading comprehension according to four aspects of reading that represent the types of questions asked of students: (1) forming a general understanding; (2) developing interpretation; (3) making reader/text connections; and (4) examining content and structure.

The *Mathematics Framework for the 2003 National Assessment of Educational Progress* guided the development of the 2003 mathematics assessment. The assessment was based on five broad content strands: (1) Number Sense, Properties, and Operations; (2) Measurement; (3) Geometry and Spatial Sense; (4) Data Analysis, Statistics, and Probability; and (5) Algebra and Functions.

In addition to content, the framework provides guidance on assessing a variety of ways of knowing and doing mathematics. Within each of the five content strands, the mathematics assessment measured students' mathematical abilities (conceptual understanding, procedural knowledge, problem solving) and mathematical power (reasoning, connections, communication).

Test Development

The National Assessment Governing Board (NAGB) is responsible for formulating policy for NAEP. NAGB is charged with developing assessment objectives and test specifications, identifying appropriate achievement levels, and carrying out other NAEP policy responsibilities. Educational Testing Service (ETS) designs the NAEP assessments and oversees the analysis and reporting of results.

Types of Questions on NAEP Assessments

NAEP assessments contain a variety of item (question) types to provide students with an opportunity to demonstrate their comprehension of the content areas. Item types include multiple-choice questions, short and extended constructed-response questions, and writing prompts (on the writing assessment only). Multiple-choice questions require students to select the correct answer from a set of four options. Constructed-response questions require students to provide a written response to a question. The length of the response required of students may vary between one or two sentences (short) to a paragraph or more (extended). On NAEP writing assessments, prompts ask students to write essays, letters, and stories to a variety of audiences.

On the reading assessment, students read passages and answered associated comprehension questions. A combination of multiple-choice and constructed response questions was used to assess students' understanding of the passages. Passages are authentic and are drawn from sources commonly available to students both in and out of the school environment.

The mathematics assessment contained three types of assessment questions – multiple-choice, short constructed-response, and extended constructed-response. As part of a select number of assessment blocks, NAEP provided various materials (calculators, rulers, protractors, manipulatives) for students to use in helping to derive their answers.

Test Design

NAEP uses matrix sampling to develop a comprehensive assessment of subject areas tested while limiting the time burden on each individual student. During their 50 minutes of testing, each student takes only a subset of the entire set of assessment questions. By distributing sets, or blocks, of items to a representative sample of students, NAEP is then able to combine results to generate average group and subgroup results for the entire assessment.

As an example, the complete 2003 grade 4 reading assessment was constructed of ten 25-minute blocks, which included five blocks of literary texts and questions and five blocks of informative texts and questions. Students participating in the assessment were randomly assigned test booklets that contained a total of two of the ten blocks.

Test Administration

The NAEP state assessments in reading and mathematics were administered between January 27 and March 7, 2003. To lessen the burden on participating schools, NAEP-trained field staff visited schools to conduct all assessment sessions. In addition to the 50 minutes allotted for testing, students spent a few additional minutes completing a background questionnaire.

Requirements for Student Participation

NAEP uses a multistage stratification design (i.e., classification into groups having similar characteristics) to randomly select representative samples of schools and students. To improve the reliability of the national results, the national sample now contains the combined sample of students assessed in each state. In each state and jurisdiction, NAEP selects approximately 2,500 to 3,000 students per grade and subject area tested. Those students are drawn from between 100 and 200 schools per grade. Within an individual school, NAEP selects about 60 students, 30 for each subject, to participate.

Student participation in NAEP is voluntary. Under NCLB, parental notification prior to testing is mandatory to inform families that students who are sampled may opt not to participate.

Students with Disabilities and Limited English Proficiency

Students with disabilities and students with limited English proficiency are included in NAEP samples. Prior to 1996, NAEP had no policy of allowing assessment accommodations for students with disabilities or English language learners. However, NAEP determined that the results for accommodated students could be combined with the results for nonaccommodated students without compromising the validity of the NAEP scales in trend comparisons. Therefore, students who typically received accommodations in their classroom testing also received such accommodations on NAEP, where appropriate.

In 1998 and 2000, NAEP used a split sample of schools, one sample in which accommodations were permitted for special-needs students who normally received them and the other sample in which accommodations were not permitted. Beginning in 2002, NAEP uses only one set of procedures – those that permit the use of accommodations.

Each year, a small number of special-needs students (typically fewer than 10% in the majority of states) are excluded from the NAEP assessments. For all other special-needs students, accommodations are made available if specified in their Individualized Education Plan (IEP) and routinely used in testing the student. Using NAEP criteria on accommodations and each student's IEP, schools determine whether students with disabilities or limited English proficiency are able to meaningfully participate in NAEP. Typically, students with disabilities are tested unless the student's IEP team judges that he or she cannot participate or if NAEP does not allow an accommodation that the student requires. NAEP also assesses LEP students unless the student has received reading or mathematics instruction primarily in English for fewer than three school years **and** the student cannot demonstrate his or her knowledge of reading or mathematics in English even with an accommodation permitted by NAEP.

Scoring

Multiple-choice responses were scored through a process of scanning student answer booklets. Constructed-responses were scored using an image-processing system. Expert scorers at Pearson used unique scoring guides developed by Educational Testing Service for each constructed-response question to score student answers. Answers to short-constructed response questions were scored either "acceptable" or "unacceptable," or received partial credit according to a three-level guide. Answers to extended constructed-response questions were scored according to a four-level guide. More than 3.9 million constructed responses in reading and 4.7 million constructed responses in mathematics were scored in 2003.

Reporting

Student performance on NAEP is indicated in two ways – scaled scores and achievement levels. The NAEP Reading and Mathematics scales range from 0 to 500. Performance for each grade is scaled separately. Therefore, average scaled scores cannot be compared across grades.

Achievement levels are used to describe expectations for student performance according to a set of standards for what students should know and be able to do. The three achievement levels are *Basic*, *Proficient*, and *Advanced*. Table 2 provides general descriptions of each achievement level. To see how the achievement levels are used to describe reading and mathematics performance at each grade level, please see the Appendix to this report.

Table 2
General NAEP Achievement Level Definitions

ACHIEVEMENT LEVEL	DESCRIPTION
Basic	Partial mastery of prerequisite knowledge and skills that are fundamental for proficient work at each grade.
Proficient	Solid academic performance for each grade assessed. Students reaching this level have demonstrated competency over challenging subject matter, including subject-matter knowledge, application of such knowledge to real-world situations, and analytical skills appropriate to the subject matter.
Advanced	Superior performance.

Interpreting this Report

When reviewing this report, it is important to keep in mind that the NAEP results are based on a *sample* of students across Massachusetts, and not the *population* of Massachusetts students. In analyzing these data, tests of significance were employed to determine what differences in the data could be confidently characterized as *not occurring by chance*. This type of difference is commonly referred to as a *significant* difference. In this report, any comparison where one number is described as higher or above another indicates the difference was significant at the $p<.05$ level. Tables denote significant differences using an asterisk.

III. Summary of 2003 NAEP Results for Massachusetts

Students Tested

In Massachusetts, students from 165 schools at grade 4 and 131 schools at grade 8 participated in the 2003 NAEP state assessments. A total of 8,166 students were assessed in reading (4,396 at grade 4 and 3,770 at grade 8) and 8,272 students were assessed in mathematics (4,499 at grade 4 and 3,773 at grade 8).

History of Results in Reading and Mathematics

Table 3
1992 – 2003 NAEP Results: Grade 4
Scaled Scores and Percent of Students at Each Achievement Level

		Scaled Score	*Advanced*	*Proficient and above*	*Basic and above*	*Below Basic*
READING						
Massachusetts	**2003**	**228**	**10**	**40**	**73**	**27**
	2002	234*	13	47*	80*	20*
	1998	223*	8*	35*	70	30
	1998[n]	225	8	37	73	27
	1994[n]	223*	8	36	69	31
	1992[n]	226	7*	36	74	26
Nation	**2003**	**216**	**7**	**30**	**62**	**38**
	2002	217	6*	30	62	38
	1998	213*	6	28*	58*	42*
	1998[n]	215	6	29	61	39
	1994[n]	212*	7	28	59*	41*
	1992[n]	215	6	27*	60	40
MATHEMATICS						
Massachusetts	**2003**	**242**	**6**	**41**	**84**	**16**
	2000	233*	3*	31*	77*	23*
	2000[n]	235*	3*	33*	79*	21*
	1996[n]	229*	2*	24*	71*	29*
	1992[n]	227*	2*	23*	68*	32*
Nation	**2003**	**234**	**4**	**31**	**76**	**24**
	2000	224*	2*	22*	64*	36*
	2000[n]	226*	2*	25*	67*	33*
	1996[n]	222*	2*	20*	62*	38*
	1992[n]	219*	2*	17*	57*	43*

***** Denotes a value that is significantly different from the value for 2003. For example, in mathematics at grade 4, Massachusetts average scaled score in 2003 (242) was statistically higher than its average scaled score (233) in 2000.

n Denotes years in which accommodations were not permitted. In 1998 and 2000, NAEP used a split sample of schools, one sample in which accommodations were permitted for special-needs students who normally received them and the other sample in which accommodations were not permitted. Comparisons of scores between the accommodations-not-permitted and the accommodations-permitted samples should be interpreted with caution.

The NAEP reading scale ranges from 0 to 500. The achievement levels correspond to the following points on the NAEP reading scale at grade 4: *Basic*, 208-237; *Proficient*, 238-267; and *Advanced*, 268 and above. The NAEP mathematics scale ranges from 0 to 500. The achievement levels correspond to the following points on the NAEP mathematics scale at grade 4: *Basic*, 214-248; *Proficient*, 249-281; and *Advanced*, 282 and above.

Table 4
2003 NAEP Results, All Students: Grade 8
Scaled Scores and Percent of Students at Each Achievement Level

		Scaled Score	*Advanced*	*Proficient and above*	*Basic and above*	*Below Basic*
READING						
Massachusetts	**2003**	**273**	**5**	**43**	**81**	**19**
	2002	271	3*	39	81	19
	1998	269*	3*	38*	79	21
	1998[n]	269*	3*	36*	80	20
Nation	**2003**	**261**	**3**	**30**	**72**	**28**
	2002	263*	2	31	74*	26*
	1998	261	2	30	71	29
	1998[n]	261	2	31	72	28
MATHEMATICS						
Massachusetts	**2003**	**287**	**8**	**38**	**76**	**24**
	2000	279*	5*	30*	70*	30*
	2000[n]	283*	6*	32*	76	24
	1996[n]	278*	5*	28*	68*	32*
	1992[n]	273*	3*	23*	63*	37*
Nation	**2003**	**276**	**5**	**27**	**67**	**33**
	2000	272*	5	25*	62*	38*
	2000[n]	274	5	26	65*	35*
	1996[n]	271*	4	23*	61*	39*
	1992[n]	267*	3*	20*	56*	44*

***** Denotes a value that is significantly different from the value for 2003. For example, in mathematics at grade 8, Massachusetts average scaled score in 2003 (287) was statistically higher than its average scaled score (279) in 2000.

n Denotes years in which accommodations were not permitted. In 1998 and 2000, NAEP used a split sample of schools, one sample in which accommodations were permitted for special-needs students who normally received them and the other sample in which accommodations were not permitted. Comparisons of scores between the accommodations-not-permitted and the accommodations-permitted samples should be interpreted with caution.

The NAEP reading scale ranges from 0 to 500. The achievement levels correspond to the following points on the NAEP reading scale at grade 8: *Basic*, 243-280; *Proficient*, 281-322; and *Advanced*, 323 and above. The NAEP mathematics scale ranges from 0 to 500. The achievement levels correspond to the following points on the NAEP mathematics scale at grade 8: *Basic*, 262-298; *Proficient*, 299-332; and *Advanced*, 333 and above.

Table 5
2003 NAEP Results by Student Group: Grade 4
Scaled Scores and Percent of Students at Each Achievement Level

	Massachusetts						Nation					
	Scaled Score	A	P+	B+	BB	% Students Assessed	Scaled Score	A	P+	B+	BB	% Students Assessed
READING												
All Students	**228**	**10**	**40**	**73**	**27**	**100**	**216**	**7**	**30**	**62**	**38**	**100**
Student Status												
Students with Disabilities	200	1	13	41	59	15	184	1	9	29	71	10
Limited English Proficient	193	#	7	32	68	4	186	1	7	28	72	8
Gender												
Female	231	13	43	76	24	47	220	8	33	65	35	49
Male	225	8	38	71	29	53	213	6	26	58	42	51
Race/Ethnicity												
African American / Black	207	2	15	50	50	10	197	2	12	39	61	17
Asian / Pacific Islander	229	13	40	74	26	4	225	11	37	69	31	4
Hispanic	202	2	15	43	57	11	199	2	14	43	57	18
White	234	13	48	81	19	74	227	10	39	74	26	59
Free/Reduced-Price Lunch												
Eligible	210	3	20	53	47	29	201	2	15	44	56	44
School Location												
Central City	212	4	23	56	44	30	208	5	22	51	49	29
Urban Fringe / Large Town	234	13	47	80	20	53	221	8	34	66	34	41
Rural Area / Small Town	236	14	50	82	18	17	219	7	32	66	34	30
MATHEMATICS												
All Students	**242**	**6**	**41**	**84**	**16**	**100**	**234**	**4**	**31**	**76**	**24**	**100**
Student Status												
Students with Disabilities	224	1	19	65	35	16	214	1	12	50	50	11
Limited English Proficient	217	1	9	55	45	4	214	#	9	49	51	9
Gender												
Female	239	4	38	82	18	49	233	3	29	75	25	49
Male	244	7	44	86	14	51	235	5	34	77	23	51
Race/Ethnicity												
African American / Black	222	#	13	62	38	11	216	#	10	54	46	17
Asian / Pacific Islander	248	13	49	89	11	4	246	10	48	87	13	4
Hispanic	222	1	13	63	37	12	221	1	15	62	38	19
White	247	7	49	91	9	73	243	5	42	87	13	58
Free/Reduced-Price Lunch												
Eligible	226	1	17	69	31	29	222	1	15	62	38	44
School Location												
Central City	228	2	21	69	31	30	227	3	23	67	33	29
Urban Fringe / Large Town	248	8	50	91	9	52	238	5	36	80	20	41
Rural Area / Small Town	247	7	48	91	9	18	236	3	32	80	20	30

A *Advanced*
P+ *Proficient and above*
B+ *Basic and above*
BB Below Basic
Estimate rounds to zero.

Table 6
2003 NAEP Results by Student Group: Grade 8
Scaled Scores and Percent of Students at Each Achievement Level

	Massachusetts						Nation					
	Scaled Score	A	P+	B+	BB	% Students Assessed	Scaled Score	A	P+	B+	BB	% Students Assessed
READING												
All Students	**273**	**5**	**43**	**81**	**19**	**100**	**261**	**3**	**30**	**72**	**28**	**100**
Student Status												
Students with Disabilities	239	#	11	44	56	14	224	#	5	32	68	10
Limited English Proficient	222	#	2	24	76	2	222	#	5	29	71	5
Gender												
Female	278	7	49	86	14	50	267	4	35	77	23	50
Male	268	4	37	77	23	50	256	2	25	67	33	50
Race/Ethnicity												
African American / Black	252	1	18	62	38	8	244	#	12	53	47	17
Asian / Pacific Islander	281	11	52	87	13	4	268	5	38	78	22	4
Hispanic	246	#	14	56	44	9	244	1	14	54	46	15
White	278	6	49	86	14	78	270	4	39	82	18	61
Free/Reduced-Price Lunch												
Eligible	251	1	19	61	39	23	246	1	15	56	44	36
School Location												
Central City	256	2	23	67	33	25	253	2	22	63	37	27
Urban Fringe / Large Town	279	7	51	86	14	53	265	3	34	76	24	42
Rural Area / Small Town	279	6	50	88	12	22	264	2	31	75	25	31
MATHEMATICS												
All Students	**287**	**8**	**38**	**76**	**24**	**100**	**276**	**5**	**27**	**67**	**33**	**100**
Student Status												
Students with Disabilities	254	1	9	41	59	15	242	1	6	29	71	11
Limited English Proficient	242	#	4	29	71	2	241	1	5	26	74	5
Gender												
Female	284	7	35	74	26	49	275	4	26	66	34	50
Male	289	10	42	78	22	51	277	6	29	67	33	50
Race/Ethnicity												
African American / Black	260	1	10	48	52	8	252	#	7	39	61	17
Asian / Pacific Islander	304	20	57	88	12	4	289	12	42	77	23	4
Hispanic	255	1	9	41	59	10	258	1	11	47	53	15
White	292	9	44	83	17	77	287	7	36	79	21	62
Free/Reduced-Price Lunch												
Eligible	261	1	13	49	51	23	258	1	11	47	53	36
School Location												
Central City	265	2	17	55	45	26	267	4	20	56	44	27
Urban Fringe / Large Town	294	11	46	83	17	53	280	6	31	71	29	42
Rural Area / Small Town	293	9	45	84	16	21	279	4	28	71	29	31

A *Advanced*
P+ *Proficient and above*
B+ *Basic and above*
BB Below Basic
Estimate rounds to zero.

IV. Comparison of NAEP Results in Top Performing States

- Grade 4 Reading

  Scaled Scores: In Massachusetts, the average scaled score for students (228) was higher than in 45 states[4] and not found to differ significantly from the remaining four highest performing states (Connecticut, New Hampshire, Vermont, New Jersey).

  Percent *Proficient* and above: The percent of Massachusetts fourth grade students performing at or above *Proficient* in reading (40 percent) was not found to differ from seven states (Connecticut, New Hampshire, New Jersey, Colorado, Minnesota, Vermont, Virginia) and higher than 42 states.

- Grade 4 Mathematics

  Scaled Scores: Students' scaled scores in Massachusetts (242) were higher than in 40 states and not found to differ significantly from the remaining nine highest performing states (New Hampshire, North Carolina, Vermont, Minnesota, Kansas, Wyoming, Connecticut, Virginia, and New Jersey).

  Percent *Proficient* and above: The percent of Massachusetts fourth grade students performing at or above *Proficient* in mathematics (41 percent) was higher than in 41 states and not found to differ from the remaining eight highest performing states (New Hampshire, Minnesota, Kansas, Connecticut, North Carolina, Vermont, New Jersey, and Wyoming).

- Grade 8 Reading

  Scaled Scores: Students' scaled scores in Massachusetts (273) were higher than those in 47 states and not found to differ significantly from those in the remaining two highest performing states (New Hampshire and Vermont).

  Percent *Proficient* and above: The percent of Massachusetts eighth grade students performing at or above *Proficient* in reading (43 percent) was higher than in 48 states and not found to differ significantly from one state (New Hampshire).

- Grade 8 Mathematics

  Scaled scores: Students' scaled scores in Massachusetts (287) were lower than in one state (Minnesota), higher than in 40 states, and not found to differ significantly than those in the remaining eight states.

  Percent *Proficient* and above: The percent of Massachusetts eighth grade students performing at or above Proficient in mathematics (38 percent) was higher than in 43 states, not found to differ significantly from five states, and lower than in one state (Minnesota).

[4] The comparisons included in this report do not include the District of Columbia or the Department of Defense domestic and overseas schools.

Table 7
2003 NAEP Results in Top Performing States by Scaled Score: Grade 4
Scaled Scores and Percent of Students at Each Achievement Level

	Scaled Score	*Advanced*	*Proficient and above*	*Basic and above*	*Below Basic*
READING					
Connecticut	228	13	43	74	26
New Hampshire	228	10	40	75	25
Massachusetts	**228**	**10**	**40**	**73**	**27**
Vermont	226	8	37	73	27
New Jersey	225	11	39	70	30
Delaware	224	7	33	71	29
Maine	224	8	36	70	30
Nation	216	7	30	62	38
MATHEMATICS					
New Hampshire	243	6	43	87	13
North Carolina	242	6	41	85	15
Vermont	242	5	42	85	15
Minnesota	242	7	42	84	16
Kansas	242	6	41	85	15
Massachusetts	**242**	**6**	**41**	**84**	**16**
Wyoming	241	4	39	87	13
Nation	234	4	31	76	24

Table 8
2003 NAEP Results in Top Performing States by Scaled Score: Grade 8
Scaled Scores and Percent of Students at Each Achievement Level

	Scaled Score	*Advanced*	*Proficient and above*	*Basic and above*	*Below Basic*
READING					
Massachusetts	**273**	**5**	**43**	**81**	**19**
New Hampshire	271	4	40	81	19
Vermont	271	4	39	81	19
South Dakota	270	3	39	82	18
Montana	270	3	37	82	18
North Dakota	270	3	38	81	19
Maine	268	3	37	79	21
Nation	261	3	30	72	28
MATHEMATICS					
Minnesota	291	9	44	82	18
North Dakota	287	5	36	81	19
Massachusetts	**287**	**8**	**38**	**76**	**24**
New Hampshire	286	7	35	79	21
Montana	286	6	35	79	21
Vermont	286	7	35	77	23
South Dakota	285	5	35	78	22
Nation	276	5	27	67	33

V. Massachusetts Results for Student Subgroups

- Student Status

  - *Reading trends*: At grade 4, students with disabilities scored lower in 2003 than in 2002. At grade 8, average scaled scores for students with disabilities did not differ significantly between 2002 and 2003.
  - *Mathematics trends*: Students with disabilities at both grades 4 and 8 scored higher in 2003 than in 2000.

Table 9
2003 NAEP Results by Student Status: Grade 4
Scaled Scores and Percent of Students at and above Basic and Proficient Levels

Subject Area and Student Status Category		SCALED SCORES AND ACHIEVEMENT LEVELS					
		Scaled Score	*Advanced*	*Proficient and above*	*Basic and above*	*Below Basic*	Percent of Students Assessed
READING							
Students with Disabilities:	**2003**	**200**	**1**	**13**	**41**	**59**	**15**
	2002	208*	4	20*	49	51	12*
	1998	192	1	11	36	64	13*
Limited English Proficient:	**2003**	**193**	**#**	**7**	**32**	**68**	**4**
	2002	193!	3!	6!	30!	70!	2!
MATHEMATICS							
Students with Disabilities:	**2003**	**224**	**1**	**19**	**65**	**35**	**16**
	2000	216*	1	12	54*	46*	14
Limited English Proficient:	**2003**	**217**	**1**	**9**	**55**	**45**	**4**

***** Denotes a value that is significantly different than the value for 2003.
! The nature of the sample does not allow accurate determination of the variability of the statistic.
Estimate rounds to zero.

Table 10
2003 Statewide NAEP Achievement Level Results by Student Status: Grade 8
Percent of Students at and above Basic and Proficient Levels

Subject Area and Student Status Category		SCALED SCORES AND ACHIEVEMENT LEVELS					
		Scaled Score	*Advanced*	*Proficient and above*	*Basic and above*	*Below Basic*	Percent of Students Assessed
READING							
Students with Disabilities:	**2003**	**239**	**#**	**11**	**44**	**56**	**14**
	2002	242	#	9	51	49	14
	1998	241	#	14	49	51	12
Limited English Proficient:	**2003**	**222**	**#**	**2**	**24**	**76**	**2**
MATHEMATICS							
Students with Disabilities:	**2003**	**254**	**1**	**9**	**41**	**59**	**15**
	2000	243*	1	6	28*	72*	15
Limited English Proficient:	**2003**	**242**	**#**	**4**	**29**	**71**	**2**

***** Denotes a value that is significantly different than the value for 2003.
! The nature of the sample does not allow accurate determination of the variability of the statistic.
Estimate rounds to zero.

- Race/Ethnicity

  - *Differences between subgroups*: In reading and mathematics, white students continue to score higher than African American/black and Hispanic students at grades 4 and 8. White students and Asian/Pacific Islander students continue to perform similarly in both subjects and at both grades.
  - *Reading trends*: At grade 4, white students scored lower in 2003 than in 2002. The performance of African American/black, Hispanic, and Asian/Pacific Islander students did not change significantly between 2002 and 2003. The scores of white, Hispanic, and Asian/Pacific Islanders students were higher in 2003 than in 1998. At grade 8, the performance of white, African American/black, Hispanic, and Asian/Pacific Islander students has not changed significantly since 1998.
  - *Mathematics trends*: White, African American/black, and Hispanic fourth-grade students scored higher in 2003 than in 2000. The average scaled scores of Asian/Pacific Islander students did not change significantly. At grade 8, white students scored higher in 2003 than in 2002, while the scores of African American/black, Hispanic, and Asian/Pacific Islander students remained the same.

Table 11
2003 Statewide NAEP Performance by Race/Ethnicity: Grade 4
Scaled scores and Percentage of Students at and above Basic and Proficient Levels

Subject Area and Race/Ethnicity		SCALED SCORE AND ACHIEVEMENT LEVELS					
		Scaled Score	*Advanced*	*Proficient and above*	*Basic and above*	*Below Basic*	Percent of Students Assessed
READING							
African American/Black:	**2003**	**207**	**2**	**15**	**50**	**50**	**10**
	2002	212	2	19	57	43	9
	1998	202	#	12	44	56	6*
Hispanic:	**2003**	**202**	**2**	**15**	**43**	**57**	**11**
	2002	207	2	15	51	49	8
	1998	194*	1	11	34	66	7*
Asian/Pacific Islander:	**2003**	**229**	**13**	**40**	**74**	**26**	**4**
	2002	233	16	46	79	21	4
	1998	211*	8	19*	50	50	3
White:	**2003**	**234**	**13**	**48**	**81**	**19**	**74**
	2002	239*	16	54	86*	14*	78
	1998	228*	9	40*	76	24	82*
MATHEMATICS							
African American/Black:	**2003**	**222**	**#**	**13**	**62**	**38**	**11**
	2000	213*	1	7	51	49	7
Hispanic:	**2003**	**222**	**1**	**13**	**63**	**37**	**12**
	2000	203*	1	7	36*	64*	10
Asian/Pacific Islander:	**2003**	**248**	**13**	**49**	**89**	**11**	**4**
	2000	237	8	36	77	23	4
White:	**2003**	**247**	**7**	**49**	**91**	**9**	**73**
	2000	239*	3*	36*	85*	15*	77

***** Denotes a value that is significantly different than the value for 2003.
# Estimate rounds to zero.

Table 12
2003 Statewide NAEP Performance by Race/Ethnicity: Grade 8
Scaled Scores and Percentage of Students at and above Basic and Proficient Levels

Subject Area and Race/Ethnicity		SCALED SCORE AND ACHIEVEMENT LEVELS					
		Scaled Score	*Advanced*	*Proficient and above*	*Basic and above*	*Below Basic*	Percent of Students Assessed
READING							
African American/Black:	**2003**	**252**	**1**	**18**	**62**	**38**	**8**
	2002	246	1	12	56	44	9
	1998	246	2	12	54	46	7
Hispanic:	**2003**	**246**	**#**	**14**	**56**	**44**	**9**
	2002	246	1	16	54	46	11
	1998	242	#	12	46	54	9
Asian/Pacific Islander:	**2003**	**281**	**11**	**52**	**87**	**13**	**4**
	2002	270	3	37	81	19	5
	1998	269	3	40	79	21	4
White:	**2003**	**278**	**6**	**49**	**86**	**14**	**78**
	2002	278	4	47	89	11	73
	1998	274	4	43*	85	15	79
MATHEMATICS							
African American/Black:	**2003**	**260**	**1**	**10**	**48**	**52**	**8**
	2000	258	#	9	43	57	7
Hispanic:	**2003**	**255**	**1**	**9**	**41**	**59**	**10**
	2000	246	1	8	34	66	8
Asian/Pacific Islander:	**2003**	**304**	**20**	**57**	**88**	**12**	**4**
	2000	292	13	44	79	21	4
White:	**2003**	**292**	**9**	**44**	**83**	**17**	**77**
	2000	284*	6*	34*	76*	24*	79

***** Denotes a value that is significantly different than the value for 2003.
# Estimate rounds to zero.

- Gender

  - *Differences between subgroups*: In 2003, female students had higher average scaled scores in reading than male students at both grades 4 and 8. Conversely, in mathematics, male students outscored female students at both grades.
  - *Reading trends*: Grade 4 reading scores for male and female students were lower in 2003 than in 2002, but remained higher than in 1998. At grade 8, the performance of male and female students in reading has not changed significantly since 1998.
  - *Mathematics trends*: In mathematics at both grades 4 and 8, male and female students scored higher in 2003 than in 2000.

Table 13
2003 Statewide NAEP Performance by Gender: Grade 4
Scaled Scores and Percent of Students at or above Basic and Proficient Levels

		Scaled Score	*Advanced*	*Proficient and above*	*Basic and above*	*Below Basic*	Percent of Students Assessed
READING							
Male:	**2003**	**225**	**8**	**38**	**71**	**29**	**53**
	2002	231*	11	43*	77*	23*	51*
	1998	219*	5*	31*	67	33	48*
Female:	**2003**	**231**	**13**	**43**	**76**	**24**	**47**
	2002	237*	16	52*	83*	17*	49*
	1998	226*	10	39	73	27	52*
MATHEMATICS							
Male:	**2003**	**244**	**7**	**44**	**86**	**14**	**51**
	2000	235*	3*	33*	78*	22*	50
Female:	**2003**	**239**	**4**	**38**	**82**	**18**	**49**
	2000	232*	2*	29*	75*	25*	50

***** Denotes a value that is significantly different from the value for 2003.

Table 14
2003 Statewide NAEP Performance by Gender: Grade 8
Scaled Scores and Percent of Students at or above Basic and Proficient Levels

		Scaled Score	*Advanced*	*Proficient and above*	*Basic and above*	*Below Basic*	Percent of Students Assessed
READING							
Male:	**2003**	**268**	**4**	**37**	**77**	**23**	**50**
	2002	266	2	33	78	22	48*
	1998	264	2	30*	75	25	51
Female:	**2003**	**278**	**7**	**49**	**86**	**14**	**50**
	2002	275	5	45	85	15	52*
	1998	274	4	45	83	17	49
MATHEMATICS							
Male:	**2003**	**289**	**10**	**42**	**78**	**22**	**51**
	2000	279*	6*	31*	70*	30*	52
Female:	**2003**	**284**	**7**	**35**	**74**	**26**	**49**
	2000	278*	4	29*	70	30	48

***** Denotes a value that is significantly different from the value for 2003.

- School Lunch Eligibility

  - *Differences between subgroups*: In reading and mathematics, students who were eligible for free/reduced-price lunch scored lower than students who were not eligible for the program at both grades 4 and 8.
  - *Reading trends*: At both grades 4 and 8, average scaled scores for students eligible for free/reduced-price lunch in 2003 were not found to differ significantly from 2002.
  - *Mathematics trends*: Fourth-grade students eligible for free/reduced-price lunch scored higher in 2003 than in 2000. Average scores for eighth-grade students eligible for free/reduced-price lunch did not change significantly between 2000 and 2003.

Table 15
NAEP Results by School Lunch Eligibility: Grade 4
Scaled Scores and Percent of Students at and above Basic and Proficient Levels

Subject Area and Student Status Category		SCALED SCORES AND ACHIEVEMENT LEVELS					
		Scaled Score	*Advanced*	*Proficient and above*	*Basic and above*	*Below Basic*	Percent of Students Assessed
READING							
ELIGIBLE:	**2003**	**210**	**3**	**20**	**53**	**47**	**29**
	2002	215	3	23	60	40	27
	1998	203*	1	15	46	54	26
NOT ELIGIBLE:	**2003**	**236**	**14**	**51**	**83**	**17**	**62**
	2002	241*	17	56	88*	12*	67
	1998	230*	10	43*	79	21	69
INFO NOT AVAILABLE:	**2003**	**225!**	**9!**	**35!**	**71!**	**29!**	**9!**
	2000	238!	17!	54!	84!	16!	6!
	1998	224!	9!	35!	72!	28!	5!
MATHEMATICS							
ELIGIBLE:	**2003**	**226**	**1**	**17**	**69**	**31**	**29**
	2000	210*	#	8*	47*	53*	26
NOT ELIGIBLE:	**2003**	**249**	**8**	**52**	**91**	**9**	**63**
	2000	242*	4*	39*	89	11	67
INFO NOT AVAILABLE:	**2003**	**242!**	**4!**	**44!**	**84!**	**16!**	**8!**
	2000	234!	4!	35!	74!	26!	7!

***** Denotes a value that is significantly different than the value for 2003.
! The nature of the sample does not allow accurate determination of the variability of the statistic.
Estimate rounds to zero.

Table 16
NAEP Results by School Lunch Eligibility: Grade 8
Scaled Scores and Percent of Students at and above Basic and Proficient Levels

Subject Area and Student Status Category		SCALED SCORES AND ACHIEVEMENT LEVELS					
		Scaled Score	*Advanced*	*Proficient and above*	*Basic and above*	*and above*	Percent of Students Assessed
READING							
ELIGIBLE:	**2003**	**251**	**1**	**19**	**61**	**39**	**23**
	2002	253	#	18	64	36	28
	1998	247	#	14	57	43	23
NOT ELIGIBLE:	**2003**	**280**	**6**	**51**	**88**	**12**	**64**
	2002	278	5	49	89	11	69
	1998	276	4	45	87	13	72
INFO NOT AVAILABLE:	**2003**	**278!**	**8!**	**49!**	**84!**	**16!**	**13!**
	2002	259!	1!	24!*	73!	27!	3!*
	1998	265!	6!	31!	73!	27!	5!
MATHEMATICS							
ELIGIBLE:	**2003**	**261**	**1**	**13**	**49**	**51**	**23**
	2000	257	1	10	45	55	22
NOT ELIGIBLE:	**2003**	**295**	**10**	**46**	**85**	**15**	**65**
	2000	286*	7*	37*	78*	22*	71
INFO NOT AVAILABLE:	**2003**	**291!**	**12!**	**43!**	**79!**	**21!**	**12!**
	2000	274!	5!	27!	64!	36!	7!

***** Denotes a value that is significantly different than the value for 2003.
! The nature of the sample does not allow accurate determination of the variability of the statistic.
Estimate rounds to zero.

- Type of Community

  - *Differences between subgroups*: In reading and mathematics at both grades, students attending schools located in central cities in 2003 scored lower than students attending schools located in urban fringes/large towns and rural areas/small towns.
  - *Reading trends*: In reading at grade 4, the average scaled scores of students in urban fringes/large towns were lower in 2003 than in 2002. The scores of students in central cities and rural areas/small towns did not change significantly. At grade 8, the scores of students attending schools in all three types of communities did not change significantly between 2002 and 2003.
  - *Mathematics trends*: In mathematics at grade 4, the average scaled scores of students attending schools in all three types of communities were higher in 2003 than in 2000. At grade 8, the scores of students in urban fringes/large towns improved from 2000 to 2003, while the scores of students in central cities and rural areas/small towns did not change significantly.

Table 17
NAEP Results by Type of Community: Grade 4
Scaled Scores and Percent of Students at or above Basic and Proficient Levels

		Scaled Score	*Advanced*	*Proficient and above*	*Basic and above*	*Below Basic*	Percent of Students Assessed
READING							
Central City	**2003**	**212**	**4**	**23**	**56**	**44**	**30**
	2002	217	5	26	62	38	29
Urban Fringe / Large Town	**2003**	**234**	**13**	**47**	**80**	**20**	**53**
	2002	241*	17	56*	88*	12*	52
Rural / Small Town	**2003**	**236**	**14**	**50**	**82**	**18**	**17**
	2002	240	16	56	87	13	19
MATHEMATICS							
Central City	**2003**	**228**	**2**	**21**	**69**	**31**	**30**
	2000	214*	1	12*	52*	48*	27
Urban Fringe / Large Town	**2003**	**248**	**8**	**50**	**91**	**9**	**52**
	2000	241*	3*	38*	87	13	60*
Rural / Small Town	**2003**	**247**	**7**	**48**	**91**	**9**	**18**
	2000	239*	3	36*	84	16	12

***** Denotes a value that is significantly different from the value for 2003.

Table 18
NAEP Results by Type of Community: Grade 8
Scaled Scores and Percent of Students at or above Basic and Proficient Levels

	Year	Scaled Score	*Advanced*	*Proficient and above*	*Basic and above*	*Below Basic*	Percent of Students Assessed
READING							
Central City	**2003**	**256**	**2**	**23**	**67**	**33**	**25**
	2002	253	2	18	63	37	28
Urban Fringe / Large Town	**2003**	**279**	**7**	**51**	**86**	**14**	**53**
	2002	276	4	46	87	13	51
Rural / Small Town	**2003**	**279**	**6**	**50**	**88**	**12**	**22**
	2002	281	4	52	92	8	21
MATHEMATICS							
Central City	**2003**	**265**	**2**	**17**	**55**	**45**	**26**
	2000	260	1	14	47	53	26
Urban Fringe / Large Town	**2003**	**294**	**11**	**46**	**83**	**17**	**53**
	2000	285*	7*	36*	78	22	61*
Rural / Small Town	**2003**	**293**	**9**	**45**	**84**	**16**	**21**
	2000	287	6	37	80	20	13*

***** Denotes a value that is significantly different from the value for 2003.

Appendix I. *Reading and Mathematics Performance Levels*

NAEP Reading Achievement Levels[5]

ACHIEVEMENT LEVEL	DESCRIPTION
Basic – Grade 4	Fourth-grade students performing at the *Basic* level should demonstrate an understanding of the overall meaning of what they read. When reading text appropriate for fourth-graders, they should be able to make relatively obvious connections between the text and their own experiences and extend the ideas in the text by making simple inferences. For example, when reading **literary** text, they should be able to tell what the story is generally about – providing details to support their understanding – and be able to connect aspects of the stories to their own experiences. When reading **informational** text, Basic-level fourth graders should be able to tell what the selection is generally about or identify the purpose for reading it, provide details to support their understanding, and connect ideas from the text to their background knowledge and experiences.
Proficient – Grade 4	Fourth-grade students performing at the *Proficient* level should be able to demonstrate an overall understanding of the text, providing inferential as well as literal information. When reading text appropriate to fourth grade, they should be able to extend the ideas in the text by making inferences, drawing conclusions, and making connections to their own experiences. The connection between the text and what the student infers should be clear. For example, when reading **literary** text, Proficient-level fourth graders should be able to summarize the story, draw conclusions about the characters or plot, and recognize relationships such as cause and effect. When reading **informational** text, Proficient-level students should be able to summarize the information and identify the author's intent or purpose. They should be able to draw reasonable conclusions from the text, recognize relationships such as cause and effect or similarities and differences, and identify the meaning of the selection's key concepts.
Advanced – Grade 4	Fourth-grade students performing at the *Advanced* level should be able to generalize about topics in the reading selection and demonstrate an awareness of how authors compose literary devices. When reading text appropriate to fourth grade, they should be able to judge text critically and, in general, to give thorough answers that indicate careful thought. For example, when reading **literary** text, Advanced-level students should be able to make generalizations about the point of the story and extend its meaning by integrating personal experiences and other readings with ideas suggested by the text. They should be able to identify literary devices such as figurative language. When reading **informational** text, Advanced-level fourth graders should be able to explain the author's intent by using supporting material from the text. They should be able to make critical judgments of the form and content of the text and explain their judgments clearly.
Basic – Grade 8	Eight-grade students performing at the *Basic* level should demonstrate a literal understanding of what they read and be able to make some interpretations. When reading text appropriate to eight grade, they should be able to identify specific aspects of the text that reflect overall meaning, extend

[5] Source: National Assessment Governing Board. *Reading Framework for the 2003 National Assessment of Educational Progress*, September 2002.

	the ideas in the text by making simple inferences, recognize and relate interpretations and connections among ideas in the text to personal experience, and draw conclusions based on the text. For example, when reading **literary** text, Basic-level eight graders should be able to identify themes and make inferences and logical predictions about aspects such as plot and characters. When reading **informational** text, they should be able to identify the main idea and the author's purpose. They should make inferences and draw conclusions supported by information in the text. They should recognize the relationships among the facts, ideas, events, and concepts of the text (e.g., cause and effect, order). When reading **practical** text, they should be able to identify the main purpose and make predictions about the relatively obvious outcomes of procedures in the text.
Proficient – Grade 8	Eight-grade students performing at the *Proficient* level should be able to show an overall understanding of the text, including inferential as well as literal information. When reading text appropriate to eighth grade, they should be able to extend the ideas in the text by making clear inferences from it, by drawing conclusions, and by making connections to their own experiences – including other reading experiences. *Proficient* eighth-graders should be able to identify some of the devices authors use in composing text. For example, when reading **literary** text, students at the Proficient level should be able to give details and examples to support themes that they identify. They should be able to use implied as well as explicit information in articulating themes; to interpret the actions, behaviors, and motives of characters; and to identify the use of literary devices such as personification and foreshadowing. When reading **informational** text, they should be able to summarize the text using explicit and implied information and support conclusions with inferences based on the text. When reading **practical** text, Proficient-level students should be able to describe its purpose and support their views with examples and details. They should be able to judge the importance of certain steps and procedures.
Advanced – Grade 8	Eighth-grade students performing at the *Advanced* level should be able to describe the more abstract themes and ideas of the overall text. When reading text appropriate to eighth grade, they should be able to analyze both meaning and form and support their analyses explicitly with examples from the text; they should be able to extend text information by relating it to their experiences and to world events. At this level, student responses should be thorough, thoughtful and extensive. For example, when reading literary text, Advanced-level eighth graders should be able to make complex, abstract summaries and theme statements. They should be able to describe the interactions of various literary elements (i.e., setting, plot, characters, and theme) and explain how the use of literary devices affects both the meaning of the text and their response to the author's style. They should be able to critically analyze and evaluate the composition of the text. When reading informational text, they should be able to analyze the author's purpose and point of view. They should be able to use cultural and historical background information to develop perspectives on the text and be able to apply text information to broad issues and world situations. When reading practical text, Advanced-level students should be able to synthesize information that will guide their performance, apply text information to new situations, and critique the usefulness of the form and content.

NAEP Mathematics Achievement Levels[6]

ACHIEVEMENT LEVEL	DESCRIPTION
Basic – Grade 4	Fourth-grade students performing at the *Basic* level should show some evidence of understanding the mathematical concepts and procedures in the five NAEP content strands. Fourth graders performing at the *Basic* level should be able to estimate and use basic facts to perform simple computations with whole numbers; show some understanding of fractions and decimals; and solve some simple real-world problems in all NAEP content strands. Students at this level should be able to use – though not always accurately – four-function calculators, rulers, and geometric shapes. Their written responses are often minimal and presented without supporting information.
Proficient – Grade 4	Fourth-grade students performing at the *Proficient* level should consistently apply integrated procedural knowledge and conceptual understanding to problem solving in the five NAEP content strands. Fourth graders performing at the *Proficient* level should be able to use whole numbers to estimate, compute, and determine whether results are reasonable. They should have a conceptual understanding of fractions and decimals; be able to solve real-world problems in all NAEP content strands; and use four-fraction calculators, rulers, and geometric shapes appropriately. Students performing at the *Proficient* level should employ problem-solving strategies such as identifying and using appropriate information. Their written solutions should be organized and presented both with supporting information and explanations of how they were achieved.
Advanced – Grade 4	Fourth-grade students performing at the *Advanced* level should apply integrated procedural knowledge and conceptual understanding to complex and nonroutine real-world problem solving in the five NAEP content strands. Fourth graders performing at the *Advanced* level should be able to solve complex and nonroutine real-world problems in all NAEP content strands. They should display mastery in the use of four-function calculators, rulers, and geometric shapes. The students are expected to draw logical conclusions and justify answers and solution processes by explaining why, as well as how, they were achieved. They should go beyond the obvious in their interpretations and be able to communicate their thoughts clearly and concisely.

[6] Source: National Assessment Governing Board. *Mathematics Framework for the 2003 National Assessment of Educational Progress*, September 2002.

Basic – Grade 8	Eighth-grade students performing at the *Basic* level should exhibit evidence of conceptual and procedural understanding in the five NAEP content strands. This level of performance signifies an understanding of arithmetic operations – including estimation – on whole numbers, decimals, fractions, and percents. Eighth graders performing at the *Basic* level should complete problems correctly with the help of structural prompts such as diagrams, charts, and graphs. They should be able to solve problems in all NAEP content strands through the appropriate selection and use of strategies and technological tools – including calculators, computers, and geometric shapes. Students at this level also should be able to use fundamental algebraic and informal geometric concepts in problem solving. As they approach the *Proficient* level, students at the *Basic* level should be able to determine which of the available data are necessary and sufficient for correct solutions and use them in problem solving. However, these eighth graders show limited skills in communicating mathematically.
Proficient – Grade 8	Eighth-grade students performing at the *Proficient* level should apply mathematical concepts and procedures consistently to complex problems in the five NAEP content strands. Eighth graders performing at the *Proficient* level should be able to conjecture, defend their ideas, and give supporting examples. They should understand the connections among fractions, percents, decimals, and other mathematical topics such as algebra and functions. Students at this level are expected to have a thorough understanding of basic level arithmetic operations – an understanding sufficient for problem solving in practical situations. Quantity and spatial relationships in problem solving and reasoning should be familiar to them, and they should be able to convey underlying reasoning skills beyond the level of arithmetic. They should be able to compare and contrast mathematical ideas and generate their own examples. These students should make inferences from data and graphs; apply properties of informal geometry; and accurately use the tools of technology. Students at this level should understand the process of gathering and organizing data and be able to calculate, evaluate, and communicate results within the domain of statistics and probability.
Advanced – Grade 8	Eighth-grade students performing at the *Advanced* level should be able to reach beyond the recognition, identification, and application of mathematical rules in order to generalize and synthesize concepts and principles in the five NAEP content strands. Eighth graders performing at the Advanced level should be able to probe examples and counterexamples in order to shape generalizations from which they can develop models. Eighth graders performing at the Advanced level should use number sense and geometric awareness to consider the reasonableness of an answer. They are expected to use abstract thinking to create unique problem-solving techniques and explain the reasoning processes underlying their conclusions.